PRESENCE AND DIRECTIONAL MOTION DETECTION

BACKGROUND

Sensors may be used to monitor the rooms of a structure. Data from the sensors may be used to determine where individual occupants are within a structure. Determining the direction of motion of occupants within the structure may require multiple sensors.

BRIEF SUMMARY

According to an embodiment of the disclosed subject matter, signals may be received from a sensor positioned in a structure. An indication of directional motion based on the signals from the sensor may be generated. The indication of directional motion may be generated without using signals from additional sensors. In response to the indication of directional motion, a control signal may be generated for a device in the structure. The control signal may be sent to the device in the structure to be implemented by the device.

Signals may be received from sensors in the structure. A substructure of the structure may be identified based on a pattern of motion determined based on the signals from the sensors. A map of the structure may be updated based on the identified substructure and the location of one or of the sensors whose signals were used to determine the pattern of motion.

Signals may be received from sensors in the structure. Context data including the time of day may be received. A pattern of motion may be identified based on the context data and directional motion determined from the signals from the sensors. A model of motion patterns may be updated with the identified pattern of motion.

Additional signals may be received from the sensors in the structure. Additional context data including the time of day may be received. It may be determined if the additional context data and directional motion determined from the additional signals corresponds to a pattern of motion in the model of motion patterns or diverges from the patterns of motion in the model of motion patterns.

When the additional context data and the directional motion determined from the additional signals corresponds to the pattern of motion in the model of motion patterns, a second control signal may be generated for the device in the structure in response to determining that the additional context data and the directional motion determined from the additional signals corresponds to a pattern of motion in the model of motion patterns. The second control signal may be sent to the device in the structure to be implemented by the device.

When the additional context data and the directional motion determined from the additional signals diverges from the patterns of motion in the model of motion patterns, an alert indication may be generated in response to determining that the additional context data and the directional motion determined from the additional signals diverges from the patterns of motion in the model of motion patterns. The alert indication may be sent to a communications device. The alert indication may include an indication of unexpected motion or an indication of lack of expected motion.

Sensor counts may be received from sensors in the structures. The sensors counts may include counts that are incremented when a sensor detects a person passing in front of the sensor in a first direction and decremented when the sensor detects a person passing in front of the sensor in a second direction. Sensor counts from sensors that monitor entryways to the same rooms may be collated to generate room counts. The room count for a room may be the summation of sensor counts from sensors that monitor entryways to that room. A second control signal for the device in the structure may generated based on a room count. The second control signal may be sent to the device in the structure to be implemented by the device.

The sensor may include a PIR sensor including a first sensor pad and a second sensor pad where the first sensor pad may be configured to produce a positive pulse signal when the first sensor pad detects motion and a second sensor pad may be configured to produce a negative pulse signal when the second sensor pad detects motion, an asymmetric lens sensor including two asymmetric lenses or apertures that focus radiation on a detector and cause the detector to generate pulse signals of different sizes based on the size of a lens or aperture of the two asymmetric lenses or apertures that focused radiation on the detector, a radar sensor, or an ultrasonic sensor.

According to an embodiment of the disclosed subject matter, a means for receiving signals from a sensor positioned in an entryway in a structure, a means for generating an indication of directional motion based on the signals from the sensor, wherein the indication of directional motion is generated without using signals from additional sensors, a means for, in response to the indication of directional motion, generating a control signal for a device in the structure, a means for sending the control signal to the device in the structure to be implemented by the device, a means for receiving signals from sensors in the structure, a means for identifying a substructure of the structure based on a pattern of motion determined based on the signals from the sensors, a means for updating a map of the structure based on the identified substructure and the location of one or of the sensors whose signals were used to determine the pattern of motion, a means for receiving signals from sensors in the structure, a means for receiving context data including the time of day, a means for identifying pattern of motion based on the context data and directional motion determined from the signals from the sensors, a means for updating a model of motion patterns with the identified pattern of motion, a means for receiving additional signals from the sensors in the structure, a means for receiving additional context data including the time of day, a means for determining if the additional context data and directional motion determined from the additional signals corresponds to a pattern of motion in the model of motion patterns or diverges from the patterns of motion in the model of motion patterns, a means for in response to determining that the additional context data and the directional motion determined from the additional signals corresponds to a pattern of motion in the model of motion patterns, generating a second control signal for the device in the structure, a means for sending the second control signal to the device in the structure to be implemented by the device, a means for in response to determining that the additional context data and the directional motion determined from the additional signals diverges from the patterns of motion in the model of motion patterns, generating an alert indication, a means for sending the alert indication to a communications device, a means for receiving sensor counts from sensors in the structures, the sensors counts including counts that are incremented when a sensor detects a person passing in front of the sensor in a first direction and decremented when the sensor detects a person passing in front of the sensor in a second direction, a means for collating sensor counts from